brain. In general thickness of cortex, the Germans and Chinese are more nearly alike, while the Hindoo in both hemispheres approaches more nearly to the dimensions in the child. In superradial fibres, the Asiatics are behind the German average. Interradial fibres are about the same, or perhaps somewhat more developed in the Hindoo. The following seems to be the rule: The less a part of the cortex is developed in regard to fibre content, the more nearly the same are the averages of German and Asiatic. Smell and taste centres in *Gyrus Fornicatus* show less fibre development in the Germans than in the Asiatics. The chief difference between the Germans and Asiatics is perhaps as follows: The Chinese and Hindoos show luxuriant growth of interradial fibres, while in the Germans the more vigorous growth appears in the superradial fibres.

We are indebted to the author for a vast amount of work very carefully done; but from individual differences, which appear in his tables, we should think that general conclusions as to brain growth at different ages, and characteristic development of different races had better be deferred until a much larger number of brains have been examined.

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The Sense Organs of Lumbricus Agricola (Hoffm). FANNY E. LANGDON. *Journal of Morphology*, XI, 194-232, Pls. XX, XIII and XIV, 2 Figs. in text. Boston, 1895.

In the total absence of any definite type of sense-organ, the sensitiveness of the earthworm to such various stimuli as light, taste, smell and touch has remained a standing puzzle. The older writers, beginning with Leydig and Schulze, and coming down to Mojsisovics and Ude in more recent years, did, it is true, give some ground of hope that the problem might find a solution in the discovery of a definite organ. Their authority, however, was about balanced by other investigators, who failed to find any trace of either structure or grouping indicative of special sensory functions among the epidermal cells. The matter seemed closed, when both Retzius and Lenhossék, employing most approved methods, declared against the presence of definite sense-organs. In the face of these authorities, however, our author is able to clear up the subject in a way that can leave no room for doubt.

The sense-organ of Lumbricus is shown to consist of a number of ganglion cells, arranged in oval groups very much like taste buds. From the distal end of each cell a sensory hair perforates the cuticle to the exterior, while from its central end arises a nerve fibre which passes with the sensory nerve trunk into the ventral ganglion of the same side and segment. The size of the organs, 100 by 60 μ, as well as their number, averaging 1,000 to each segment, make it doubly remarkable that they have been overlooked so long. Plate XIV presents us with camera drawings of the sensory spots as seen on the cuticle of a specimen for characteristic metameres. From this it appears that the organs are in general scattered irregularly over the surface, somewhat more numerous on the cephalic than caudal half of the segment, and more numerous near the extremities than in the middle of the body. No differentiation of organs for different senses has been made out.

The paper is compactly and clearly written and well illustrated, and in every respect merits high rank in the literature of comparative sense-organs. C. F. H.